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Factors Affecting Effective Corporate Income Tax Rate of the Czech and Russian "Blue Chips" in 2012 – 2015

Marina Purina[*]

Abstract:

Nowadays, influence of international business groups on the individual countries' economic systems is still growing. Effective tax rate showing a real level of the tax burden is one of the most important parameters of each economy. This article analyses the factors affecting the effective corporate income tax rate of the "blue chips" in the Czech Republic and in the Russian Federation. The factors are divided into two groups: external and internal ones. The hypothesis states that the internal factors (assets, debt ratio and equity) are more correlated with the dependent variable than the external ones (Paying Taxes index and average oil price). The regression analysis, particularly, panel data model with fixed effects, was used to estimate influence of the independent variables on the effective tax rate separately in Russia and Czech Republic. The research demonstrated that the mentioned internal factors are more significant for the Russian companies that the external factors. In the case of the Czech Republic, the same result was obtained with lower confidence level.

Key words: Corporate income tax; Effective corporate income tax rate; "Blue chips"; Regression analysis.

JEL classification: H25, M41.

1 Introduction

The effective tax rate, especially in the case of the corporate income tax, is an important and well-known economic indicator showing a real level of the tax burden that often differs from a statutory tax rate. The reasons are numerous: legal tax optimization by using tax rebates, advantages and allowances; tax avoidance and tax evasion; different rules for recognition of costs in the financial accounting and according to the tax legislation, which leads to different concept of profit (and, if appropriate, income) from the accounting and tax point of view, etc.

The effective tax rate is considered to be one of the major parameters especially for decisions on investments and is monitored by states and private companies. The Big Four accounting firms publish related issues regularly; for example,

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PricewaterhouseCoopers LLP ("PwC") examined global effective tax rates for the 2,000 largest companies in the world for the years 2006 to 2009 (PwC, 2011).

Valuable evidences can be obtained from comparison of:

- countries with similar economic situation, e.g. some developed EU countries with close economic, political, cultural, etc. relations, where is a high probability that the factors of the effective tax rate would be similar as well which means that the differences (except for those explained by a statutory tax rate) are of a great interest;
- countries with different economic situations where the result cannot be predicted easily but remains useful for the investors, businessmen and governments of the analysed states.

The paper intends to choose the second possibility. The countries that are going to be studied here are the Czech Republic and the Russian Federation. The choice of the mentioned states may be explained by the following reasons. On the one hand, both of them are economies in transition; let the Czech Republic have more significant results in this process. Their statutory corporate income tax rates are relatively close (19% in the Czech Republic and 20% in the Russian Federation). On the other hand, the Czech Republic is a small opened economy where foreign investments play a big role. The Russian Federation is a big economy depending rather on export of raw materials. Moreover, the tax legislation of these countries varies considerably. The actuality of this theme is given by growing influence of international business groups on the individual countries' economic systems, as well as by an important role of trade and economic relationships of the Czech Republic and the Russian Federation despite actual mutual sanctions.

To sum up, the aim of the paper is to conduct a regression analysis of the internal and external factors affecting the effective tax rates of the Czech and Russian "blue chips".

The structure of the paper is described here. The introduction is followed by literature review and a hypothesis. Then, the methodology and the way of collecting data is described. The next chapter demonstrates the results of the analysis, i.e. the factors that have influence on the effective tax rate in the Czech Republic and the Russian Federation. The conclusion summarizes the obtained results, shows their restrictions and leaves place for the future discussion.

2 Literature Review

The problem the paper is concentrated on has been studied from various points of view, beginning with King's and Fullerton's classic methodology up to microeconomic level where the influence of the effective tax rate on concrete firms is studied.

This indicator exists in two forms. Implicit effective tax rate is calculated as a ratio of applicable taxes to the subject of taxation and is used to measure the effectiveness of taxation of labour, capital, consumption, and energy (Mejzlík et al., 2014). Effective marginal tax rate is used for considering a marginal increase in the use of production factors (Barrios et al., 2014). This paper analyses the implicit effective tax rate.

The influence of the effective tax rate on global macroeconomic factors such as incomes and consumption was analysed, for example, in the paper (Mendoza et al., 1994). This indicator is also discussed regarding the implementation of IFRS as far as the corporate income tax has to be calculated only according to the tax legislation, not IFRS, in many states. The researchers agree that using IFRS for tax purposes is a "win-win-win" situation that reduce costs, attract investors and makes the tax control procedures easier not only for taxpayers, but for the tax administration as well (Mejzlík et al., 2015). According to (Schön, 2004), most characteristics of IFRS are consistent with the objectives of corporate taxation which makes these standards a good starting point for the possible common European income taxation.

Many papers in this field deal with comparison between countries or development of the effective tax rate during certain periods. Thus, the above-mentioned study (PwC, 2011) demonstrates the differences between the average effective tax rate faced by U.S.-headquartered companies and other world (OECD, non-OECD, EU, etc.) during the years 2006 – 2009. According to this research, the effective tax rate in the Czech Republic is 20.4% (the result is based on 4 observations), and 26.0% in the Russian Federation (72 observations), whereas the non-U.S. average is 19.5% (4,891 observations), and OECD average excluding U.S. is 22.6% (PwC, 2011). However, a new statutory corporate income tax rate (20% instead of 24%) has been established in Russia since the tax period 2009.

The effective tax rate of the Czech companies in the years 2007 – 2014 was studied by (Lisztwanova and Ratmanova, 2015). Regarding the Russian Federation, similar research for the BRIC countries was presented by E. Fernandez-Rodriguez and A. Martinez-Arias (Fernandez-Rodriguez and Martinez-Arias, 2014). In this article, the authors conclude that the effective tax rate of the one year is dependent on the tax burden of the previous year.

The effective income tax rate faced by the biggest Czech and Russian companies was described briefly for the year 2014 in (Purina, 2016). The analysis conducted in this paper demonstrated significant variance in the effective income tax rate for the Russian companies, while the companies operating in the Czech Republic had this rate at a comparable level of approximately 22.27%, which corresponded to the statutory rate of 19%. The effective income tax rate for the Russian companies varied greatly and was on average substantially higher than for the Czech companies (42.25%). Nevertheless, the study was concentrated only on one-year data from a limited sample of companies ("blue-chips" only).

The factors affecting the tax income (respectively, corporate tax income to GDP ratio) were analysed in (Kubátová and Říhová, 2009) with using of special statistic methods (panel data). The authors included in the regression model the following factors: tax rates including average effective tax rate, size of the corporate sector, profitability of the corporate sector, tax evasions, measure of incorporation, and cyclicality of the economic year. Each of the factors is presented as a set of independent variables. The research demonstrated that the statutory tax rate, size of the corporate sector, inflation and measure of incorporation are positively correlated with the tax income. The effective tax rate is also positively correlated with the state tax income.

The actual article continues logically the analyses that began in the mentioned papers. The aim is now to analyse the factors that influenced the effective corporate income tax rate of the "blue chips" in the last four years in the Czech Republic and in the Russian Federation.

The choice of the period (2012 – 2015) can be explained by the fact that the Russian companies, whose securities are traded on a regulated market, started preparing their consolidated financial statements under IFRS beginning from the financial year 2012. Comparability of financial data is an inherent condition of this study. The choice of the listed companies is also explained by the fact that the biggest (and often the richest) firms are expected to plan their taxes carefully, using all legal opportunities for reduction of the tax burden which means their effective tax rate is not expected to differ significantly from the statutory tax rate during long periods (extremes in one-two years are of course possible). That is the reason why the effective tax rate of the "blue chips" is an important indicator that may be compared to smallest firms' effective tax rate in further studies.

The analysed companies' effective corporate income tax rate may be influenced by factors that can be divided into internal and external. Internal factors are connected with the firm's economic situation, its profits, assets, revenues, debt ratio, depreciation, etc. External factors are given by the market or by the government: statutory tax rate, tax legislation, inflation, exchange ratios, prices of raw

materials, and so on. (Choice of the factors including into the analysis is described in chapter 3.3) In some cases, external factors can have a great impact on the companies. However, the most important external factor with regards to effective tax rate, statutory tax rate, has not changed during the studied period nor in the Czech Republic neither in the Russian Federation.

Thus, the following hypothesis can be formulated:

H0. The internal factors (assets, debt ratio and equity) are more correlated with the effective corporate income tax rate than the external factors (average oil price and factors explained by the Paying Taxes index).

It is expected that the hypothesis could not be rejected. The hypothesis is going to be tested for both analysed countries separately, as was mentioned above.

3 Data and Methodology

3.1 Receiving a sample of companies included in the analysis

To analyse the hypothesis stated above, it is necessary to calculate the effective tax rate of the chosen companies in the Czech Republic and in the Russian Federation in the last four years, to suggest possibly important factors affecting the effective tax rate, and to analyse their impact. Thus, the main methods used in the article are observation, description, and analysis, in particular, panel data regression in Panel Data Toolbox for MATLAB (Álvarez, I. C. et al., 2017).

Firstly, a list of Czech and Russian companies preparing their consolidated financial statements in accordance with IFRS, whose securities are traded on a regulated market, should be prepared. The data of Prague Stock Exchange and Moscow Exchange was used to obtain a sample of comparable companies also known as “blue chips”. Prague Stock Exchange offers PX index that includes information about shares of the 13 biggest firms from the point of view of their market capitalization (Prague Stock Exchange, 2016). The same role is played by Russian RTSSTD index consisting of shares of the 16 biggest companies trading their securities on Moscow Exchange (Moscow Exchange, 2016).

The next step of the preparation is to obtain the financial statements of the companies mentioned in the indices and to make sure that they report under IFRS to exclude possible differences due to application of other financial reporting standards. For example, PAO “LUKOIL” prepared its consolidated financial statements according to US GAAP during some years of the analysed period. Firms reported loss were also excluded from the sample. Analyses of such companies may be a theme of a special research. The financial statements of the companies operating in the Czech Republic are published on the web portal

www.justice.cz or on the webpages of Prague Stock Exchange. The financial statements of Russian companies are available from the websites of these companies.

The PX index and the RTSSTD index looked like the following at the date 7/12/2016 and 6/12/2016 (Table 1).

The list of abbreviations of the companies' names is in the Appendix 1.

Tab. 1 The PX index and the RTSSTD index as at 7/12/2016 and 6/12/2016

Company	Share in the index (in %)	Result (included or not)	Reason if not included
		PX index	
KB	21.20	Yes	-
EGB	20.25	No	Loss
ČEZ	18.43	Yes	-
MMB	10.45	Yes	-
VIG	8.68	Yes	-
O2	6.12	Yes	-
PM	3.02	Yes	-
PNW	2.98	Yes	-
SSG	2.72	No	Loss
Unipetrol	2.71	No	Loss
CETV	1.98	No	US GAAP
Fortuna	0.76	Yes	-
Kofola	0.71	No	Loss
		RTSSTD index	
Gazprom	18.24	Yes	-
Sberbank	16.89	Yes	-
LUKOIL	14.87	No	US GAAP
Novatek	7.26	Yes	-
Magnit	6.79	Yes	-

Company	Share in the index (in %)	Result (included or not)	Reason if not included
		RTSSTD index	
GMKN	6.02	Yes	-
Rosneft	4.78	Yes	-
VTB	4.00	Yes	-
TATN	3.43	No	US GAAP
TRN	3.42	Yes	-
SNG	3.16	Yes	-
MTS	2.77	No	IFRS since 2014
ALRS	2.71	No	Loss
SNGSP	2.08	No	SNG (privileged shares) – has already been included
MOEX	1.81	Yes	-
CHMF	1.77	No	Loss

Source: (Prague Stock Exchange, 2016; Moscow Exchange, 2016; consolidated financial statements of the companies mentioned in the Table 1 for the financial years 2012 – 2015).

3.2 Calculating the effective corporate income tax rate of the companies

The effective corporate income tax rate was calculated in the Microsoft Excel 2013 as total income tax divided by pre-tax income according to (PwC, 2011). This study excludes oil and gas companies from the sample as they are often taxed with higher tax rates (PwC, 2011). However, there is no extra corporate income tax rate for such firms in the Czech Republic and in the Russian Federation; thus, oil and gas companies remain in the sample. The results are listed below in the Table 2.

Tab. 2 Effective corporate income tax rate of the Russian and Czech companies in the years 2012 – 2015 (in %)

Company	2012	2013	2014	2015
Gazprom	27.01	17.59	48.77	12.97
Sberbank	22.33	20.56	22.42	32.70
Novatek	19.46	19.82	30.14	20.25
Magnit	22.27	22.15	23.12	17.04

Company	2012	2013	2014	2015
GMKN	31.82	42.48	24.81	23.53
Rosneft	22.17	12.82	26.78	22.61
VTB	21.49	20.22	96.04	56.10
TRN	21.42	25.45	38.31	13.36
SNG	19.46	18.97	17.27	17.18
MOEX	23.03	20.80	20.15	19.78
KB	15.99	17.96	16.68	16.73
ČEZ	21.20	20.72	21.72	23.60
MMB	19.90	22.01	23.18	21.22
VIG	21.08	27.81	24.50	35.89
O2	16.92	21.60	21.98	21.14
PM	19.94	19.98	20.06	19.76
PNW	23.61	14.83	65.89	13.08
Fortuna	23.78	25.91	25.27	5.24

Source: Authorial computation in Microsoft Excel 2013 based on the consolidated financial statements of the analysed companies for the financial years 2012 – 2015.

The data from the Table 2 is panel, so panel data regression, which may be used also in case of short time series and economies in transition (Pánková, 2007), is appropriate here.

To assure the unity of measuring, average or daily foreign exchange ratios were used if necessary (Central Bank of the Russian Federation, 2016; Kursvaluit.ru, 2016; Kurzy.cz, 2012-2015).

3.3 Choosing internal and external factors for the analysis

As for the internal factors, the following quantitative factors would be the part of the research:

- Assets (total)
- Equity
- Debt ratio (Borrowed capital/Total capital)

The choice of these factors is explained by the fact that they are among the core financial indicators and are not profit indicators, which are surely correlated with

taxation of profits. Qualitative factors, such as industry or major owner (state/private investors), may be a subject of further research.

There are many external indicators, which can affect the effective tax rate. For instance, (Kubátová and Říhová, 2009) includes into the model statutory tax rate, GDP, FDI, inflation, unemployment rate, incorporation rate, tax evasions and tax avoidance, level of corruption, and some other factors related to the above-mentioned groups. The actual task of the paper is to define which of these indicators may be potentially significant while studying the Czech Republic and the Russian Federation.

The statutory tax rate is not a subject to this research because it has not changed during the years 2012 – 2015 neither in the Czech Republic nor in the Russian Federation. Otherwise, the Russian crisis begun in 2014 should be taken into account as it is still affecting Russian economy significantly and may results in the financial reports for the year 2015. One of the main reasons of the mentioned crisis was rapid declining of oil prices (Gregory, 2015). Russian economy has been depended on export of fuel and energy for all studied years, as the following Table 3 demonstrates.

Tab. 3 Russian export of fuel and energy in % of total export

Countries	2015	2014	2013	2012
Non-CIS countries	66.4	73.4	74.5	73.0
CIS countries	39.5	43.6	47.0	54.2

Source: Федеральная таможенная служба, 2016 and 2014.

Due to the reason that the whole Russian economy is influenced by average oil price, this indicator, especially significant for Russian “blue chips” as they belong often to this sector, is included in the analysis. Oil price is a key factor for changes in other indicators (e.g. unemployment, exchange ratio, inflation, GDP) in case of Russian economy in the analysed period; thus, the mentioned parameters had not been included in the research.

The system and principles of taxation usually do not change as rapidly as economic criteria described above. This is the reason why the model should contain an indicator characterizing the tax system of the analysed states. Paying Taxes, a part of yearly Doing Business Index, which specifies the time, total tax rate and number of tax payments in a year, was chosen in this paper. The economies are sorted by their distance to frontier scores (World Bank, 2016).

3.4 Panel data model

Linear model was chosen according to (Kubátová and Říhová, 2009). Thus, the expected model is formulated as follows:

$$ETR_{it} = \beta_0 + \beta_n * Internal_factor_{nit} + \beta_m * External_factor_{mit} + \varepsilon_{it}, \quad (1)$$

where i means analysed firms; t represents years; n is a number of an internal factor; m is a number of an external factor; ε_{it} means a random error.

As far as the data was not chosen randomly from a population, it is necessary to use a panel model with fixed effects. The following calculations were held in the Panel Data Toolbox for MATLAB (Álvarez, I. C. et al., 2017). For each country, they include estimation of the model; the individual effects analysis; robust standard error estimation; F-test of individual effects and Pesaran's test of cross-sectional dependence (Álvarez, I. C. et al., 2017). To make the data reliable, extreme meanings were excluded before the analysis; the tests played their role as well. The MATLAB results of these computations are demonstrated in the Appendix 2.

4 Results and Discussion

This part of the article is concentrated on final results of the panel model with fixed effects estimation after all necessary tests and changes.

4.1 Russian Federation

After all relevant corrections and tests, the next independent variables are statistically significant for the Russian sample (Table 4).

Tab. 4 Statistically significant internal and external variables: Russian firms

Variable	Confidence level (in %)
Internal variables	
Assets	99
Debt ratio	95
Equity	99
External variables	
Paying Taxes	90
Average Oil Price	95

Source: Authorial computation in Panel Data Toolbox for MATLAB.

Individual effects in this case are statistically significant at 90% level of confidence. Robust standard errors estimation changed the confidence interval for the Paying Taxes indicator to 95% and did not consider the Average Oil Price variable as a statistically significant (p-value = 0.222). According to F-test of individual effects, the hypothesis that there are no individual effects cannot be rejected. According to Pesaran's test of cross-sectional dependence, the hypothesis of no cross-sectional dependence cannot be rejected. All details can be found in the Appendix 2.

Thus, the hypothesis H0 formulated in the beginning of the paper cannot be rejected for the Russian firms by the conducted research.

The result of the analysis demonstrated that all internal variables included in the model are statistically significant. Assets and equity were expectedly more significant that debt ratio, because the interest tax shield depends on interest only, not on the whole amount of debts. According to cross-sectional regression analysis conducted by (Kemsley and Nissim, 2002), the value of the debt tax shield was estimated as 10% of firm value, so the result of the actual paper corresponds to this research in the sense of significance of interest tax shield in comparison with firm value. Significance of debts regarding effective tax rate in form of debts to GDP ratio was described in (Kubátová and Říhová, 2009).

As was predicted in Chapter 3.3 while choosing the external indicators, both of them are significant for the chosen Russian companies. Statutory tax rate had not changed in the Russian Federation during the years 2012 – 2015. Nevertheless, Paying Taxes index demonstrated improvements in distance to frontier from 75.39 in 2012 to 80.63 in 2015 (World Bank, 2012-2015), which may mean, inter alia, changes in other parts of tax system. This article demonstrated statistical significance of this indicator for Russian "blue chips".

Average oil price declined dramatically only in 2015 from 99 U.S. dollars per barrel to 53 U.S. dollars per barrel (Statista Inc., 2016). However, this change was significant enough to result in the model. The consequences of this drop in oil prices were described in Chapter 3.3. This fact can be confirmed by various statistics demonstrating how Russian government revenues depend on oil prices, for example, (Barden, 2016).

Thus, the results of this paper regarding Russian Federation correspond with existing evidences.

4.2 Czech Republic

As for the Czech Republic, a linear regression model did not explain the situation well enough, so a logarithmic model was chosen, instead. The results of this analysis after all necessary corrections and tests are shown in the Table 5.

Tab. 5 Statistically significant internal and external variables: Czech firms

Variable	Confidence level (in %)
Internal	
Assets	90
Debt ratio	90
Equity	95

Source: Authorial computation in Panel Data Toolbox for MATLAB.

In this case, external variables and individual effects are not statistically significant. Robust standard errors estimation did not consider the variables as statistically significant. According to F-test of individual effects, the hypothesis that there are no individual effects cannot be rejected. According to Pesaran's test of cross-sectional dependence, the hypothesis of no cross-sectional dependence cannot be rejected. All details can be found in the Appendix 2.

Thus, the hypothesis H0 formulated in the beginning of the paper cannot be rejected for the Czech firms before robust standard errors estimation that demonstrated significance of internal variables only.

The result of the analysis demonstrated that all internal variables included in the model are statistically significant before robust standard errors estimation. For the chosen Czech firms, equity is more significant than debt ratio, which corresponds with the evidences described in Chapter 4.1.

None of the chosen external indicators was statistically significant for the Czech companies. Paying Taxes index (World Bank, 2012-2015) remains basically on the same level since 2013 (75.73; 75.74; 75.49 for the years 2013; 2014; 2015) and due to this reason does not have a significant influence on the effective tax rate.

As for the average oil price, its drop should result in a slowdown of inflation growth, especially for countries importing oil. These conclusions were obtained by S. Benecká and J. Hošek (Česká národní banka, 2015) using GVAR (Global Vector AutoRegressive) methodology which allows to study not only primary consequences of different shocks, but also secondary effects related to financial and trade connections between economies. Whole Eurozone registered 0.1% decline of inflation during 2015 (Česká národní banka, 2015). Mineral fuels and

related goods made only 6.7% of total Czech import in 2015 and 8.4% in 2014 (Ministerstvo průmyslu a obchodu České republiky, 2016), which means that influence of the oil prices cannot be as important here as in the Russian Federation. Thus, the fact that the average oil price is not statistically significant for Czech "blue chips" is also fully explained.

Further research in this area may be oriented on using other variables in the regression model or taking into account wider range of countries, e.g. Eurozone.

5 Conclusion

The analysis demonstrated that the internal factors such as assets, equity and debt ratio are more correlated with the effective corporate income tax rate than the external factors, such as Paying Taxes index and average oil price. Better result was obtained in the case of the Russian companies that demonstrated high confidence level for all analysed internal factors (assets, debt ratio and equity) and for Paying Taxes index (respectively, also for average oil price between robust standard errors estimation).

In the case of the Czech companies, acceptable confidence levels were obtained before robust standard errors estimation for the internal variables (assets, equity and debt ratio), as it was expected in the hypothesis formulated in this paper.

Talking about limited sample of companies one should take into account that the internal factors are often more important here, especially regarding the biggest companies in the country which may have enough possibilities to cope with negative influence of external factors. An interesting theme for a further research may be estimation of a panel model with random effects for a bigger sample of firms. However, comparability of data is a significant hindrance here, because neither Czech nor Russian firms are obliged to prepare their financial statements according to IFRS. Thus, only firms, whose securities are traded on a regulated market, may be included in the analysis without time-consuming (and almost impossible without detailed internal information) data correction.

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Appendix 1: List of abbreviations

KB	Komerční banka, a.s.
EGB	Erste Group Bank AG
ČEZ	ČEZ, a.s.
MMB	MONETA Money Bank, a.s.
VIG	VIENNA INSURANCE GROUP
O2	O2 Czech Republic a.s.
PM	Philip Morris ČR a.s.
PNW	PEGAS NONWOVENS SA
SSG	STOCK SPIRITS GROUP PLC
Unipetrol	UNIPETROL, a.s.
CETV	CENTRAL EUROPEAN MEDIA ENTERPRISES LTD
Fortuna	Fortuna Entertainment Group N.V.
Kofola	Kofola ČeskoSlovensko a.s.
Gazprom	PAO "Gazprom"
Sberbank	PAO "Sberbank"
LUKOIL	PAO "LUKOIL"
Novatek	OAO "Novatek"
Magnit	PAO "Magnit"
GMKN	PAO „GMK „Norilsk Nickel"
Rosneft	OAO "NK "Rosneft"
VTB	Bank VTB (PAO)
TATN	PAO "Tatneft"
TRN	Transneft PAO
SNG	OAO "Surgutneftegaz"
MTS	Mobilnye Telesistemy PAO
ALRS	ALROSA PAO
MOEX	PAO Moskovkskaya Birzha
CHMF	Severstal (PAO)

Appendix 2: Regression analysis using Panel Data Toolbox for MATLAB

Russian Federation

Panel 1: Fixed effects (within) (FE)

N = 24, n = 6, T = 4, (Balanced panel)

R-squared = 0.67652, Adj R-squared = 0.42769

Wald F(5, 13) = 5.437641, p-value = 0.0065

RSS = 0.141779, ESS = 2.169278, TSS = 2,169278

Deptvar	Coefficient	Std. error	t-stat	p-value
Assets	0.000000	0.000000	3,6799	0.003 ***
Debt. ratio	-1.387249	0.561279	-2.4716	0.028 **
Equity	0.000000	0.000000	-3.8640	0.002 ***
Paying taxes	2.856618	1,467395	1,9467	0.074 *
Average oil price	224.967999	102.211170	2.2010	0.46 **

Individual effects

ID	Ieffect	Std. error	t-stat	p-value
3	-2.181463	1.062812	-2.0525	0.061 *
4	-1.861336	1.004193	-1.8536	0.087 *
6	-1.993629	1.018755	-1.9569	0.072 *
7	-1.953902	0.964370	-2.0261	0.064 *
8	-2.090868	1.061162	-1.9704	0.070 *
9	-2.334228	1.120419	-2.0834	0.058 *

F test of individual effects

H0: All mu_i = 0

F(5, 15) = 1.114447

p-value = 0.3996

Pesaran's test of cross sectional dependence

H0: Corr(res_{it}, res_{jt}) = 0 for i != j

CD = -0.423637

p-value = 0.3359

Panel: Fixed effects (within) (FE)

N = 24, n = 6, T = 4, (Balanced panel)

R-squared = 0.67652, Adj R-squared = 0.42769

Wald F(5, 5) = 27,978612, p-value = 0.0012

RSS = 0.141779, ESS = 2.169278, TSS = 2,169278

Standard error robust to heteroscedasticity adjusted for 6 clusters

Deptvar	Coefficient	Std. error	t-stat	p-value
Assets	0.000000	0.000000	5.0996	0.004 ***
Debt. ratio	-1.387249	0.380561	-3.6453	0.015 **
Equity	0.000000	0.000000	-5.9685	0.002 ***
Paying taxes	2.856618	0.701432	4.0725	0.010 ***
Average oil price	224.967999	161.208993	1.3955	0.222

Czech Republic

Panel: Fixed effects (within) (FE)

N = 24, n = 6, T = 4, (Balanced panel)

R-squared = 0.43973, Adj R-squared = 0.00876

Wald F(5, 13) = 2.040649, p-value = 0.1393

RSS = 1.146531, ESS = 63.050378, TSS = 63.050378

Standard error robust to heteroscedasticity adjusted for 6 clusters

Deptvar	Coefficient	Std. error	t-stat	p-value
Assets	2.402757	1.240434	1.9370	0.075 *
Debt. ratio	-3.011335	1.463179	-2.0581	0.060 *
Equity	-3.442330	1.441066	-2.3887	0.033 **
Paying taxes	-0.882815	1.780919	-0.4957	0.628
Average oil price	0.228569	0.348043	0.6567	0.523

Individual effects

ID	Ieffect	Std. error	t-stat	p-value
1	5.873239	5.803889	1.0119	0.330
2	8.889234	5.572844	1.5951	0.135
4	6.709275	5.878571	1.1413	0.274
5	6.006307	4.824141	1.2451	0.235

ID	Ieffect	Std. error	t-stat	p-value
6	5.056833	4.485770	1.1273	0.280
8	2.746822	4.101481	0.6697	0.515
OVERALL	5.880285	5.067248	1.1604	0.267

F test of individual effects
H0: All mu_i = 0
F(5, 13) = 2.705346
p-value = 0.0688

Pesaran's test of cross sectional dependence
H0: Corr(res_{it}, res_{jt}) = 0 for i != j
CD = -0.380909
p-value = 0.3516

Panel: Fixed effects (within) (FE)
N = 24, n = 6, T = 4, (Balanced panel)
R-squared = 0.13273, Adj R-squared = -0.53440
Wald F(5, 5) = 2.541645, p-value = 0.1645
RSS = 0.038059, ESS = 1.094472, TSS = 1.094472
Standard error robust to heteroscedasticity adjusted for 6 clusters

Deptvar	Coefficient	Std. error	t-stat	p-value
Assets	0.000000	0.000000	0.9341	0.393
Debt. ratio	0.101247	0.151456	0.6685	0.533
Equity	-0.000001	0.000001	-0.8075	0.456
Paying taxes	0.119261	0.214188	0.5568	0.602
Average oil price	20.973329	54.629981	0.3839	0.717